2019

Nebraska Summary: S1178 Fendt 933

Nebraska Tractor Test Laboratory
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SUMMARY OF OECD TEST 3197 - NEBRASKA SUMMARY 1178
FENDT 933 GEN 6 DIESEL
STEPLESS VARIODRIVE TRANSMISSION

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Diesel Consumption Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	D.E.F. Consumption Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption Gal/hr *(l/h)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1060 rpm)						
287.8 *(214.6)*	1700	14.53 *(55.00)*	0.354 *(0.215)*	19.80 *(3.90)*	1.45 *(5.48)*	
Standard Power Take-off Speed (1000 rpm)						
290.5 *(216.6)*	1604	14.42 *(54.60)*	0.348 *(0.212)*	20.15 *(3.97)*	1.38 *(5.24)*	
Maximum Power (1 hour)						
291.8 *(217.6)*	1400	14.17 *(53.65)*	0.340 *(0.207)*	20.60 *(4.06)*	1.39 *(5.25)*	
VARYING POWER AND FUEL CONSUMPTION						
287.8 *(214.6)*	1700	14.53 *(55.00)*	0.354 *(0.215)*	19.80 *(3.90)*	1.45 *(5.48)*	Air temperature
249.0 *(185.7)*	1731	13.00 *(49.20)*	0.366 *(0.223)*	19.16 *(3.78)*	1.23 *(4.66)*	70°F *(21°C)*
189.4 *(141.2)*	1754	10.57 *(40.00)*	0.391 *(0.238)*	17.92 *(3.53)*	0.89 *(3.38)*	Relative humidity
127.7 *(95.2)*	1775	8.08 *(30.60)*	0.444 *(0.270)*	15.79 *(3.11)*	0.67 *(2.54)*	29%
64.2 *(47.9)*	1785	5.60 *(21.20)*	0.611 *(0.372)*	11.47 *(2.26)*	0.32 *(1.23)*	Barometer
-- --	1796	3.33 *(12.60)*	-- --	-- --	0.18 *(0.69)*	30.1" Hg *(101.8 kPa)*

Maximum torque - 1106 lb.-ft. *(1501 Nm)* at 1300 rpm
Maximum torque rise - 24.5%
Torque rise at 1400 engine rpm - 23%
Power increase at 1400 engine rpm - 1.0%

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Power at Rated Engine Speed— Speed setting 9										
250.5 *(186.8)*	16525 *(73.50)*	5.69 *(9.15)*	1693	1.7	0.410 *(0.250)*	17.14 *(3.37)*	0.048 *(0.029)*	163 *(73)*	48 *(9)*	29.7 *(100.7)*
75% of Pull at Rated Engine Speed—Speed setting 9										
194.4 *(145.0)*	12375 *(55.05)*	5.89 *(9.48)*	1738	1.4	0.440 *(0.268)*	15.94 *(3.14)*	0.049 *(0.030)*	169 *(76)*	48 *(9)*	29.7 *(100.7)*
50% of Pull at Rated Engine Speed— Speed setting 9										
129.3 *(96.4)*	8210 *(36.53)*	5.90 *(9.50)*	1764	1.0	0.513 *(0.312)*	13.65 *(2.69)*	0.054 *(0.033)*	165 *(74)*	52 *(11)*	29.8 *(100.8)*
75% of Pull at Reduced Engine Speed—Speed setting 11										
193.9 *(144.6)*	12375 *(55.04)*	5.88 *(9.46)*	1455	1.4	0.416 *(0.253)*	16.85 *(3.32)*	0.043 *(0.026)*	167 *(75)*	52 *(11)*	29.8 *(100.8)*
50% of Pull at Reduced Engine Speed—Speed setting 11										
130.5 *(97.3)*	8220 *(36.57)*	5.95 *(9.58)*	1464	1.0	0.457 *(0.278)*	15.33 *(3.02)*	0.051 *(0.031)*	165 *(74)*	50 *(10)*	29.8 *(100.8)*

Location of tests: DLG TestService,GmbH, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

Dates of tests: September to December 2019

Manufacturer: AGCO GmbH Johann Georg Fendt Str 4 D 87616 Marktoberdorf Germany

CONSUMABLE Fluids: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8408 **Fuel weight** 7.01 lbs/gal *(0.840 kg/l)* **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal *(1.087 kg/l)* **Oil SAE** 5W-30 **API service classification** CK-4 **Transmission and hydraulic lubricant** AGCO Permantran 821 XL fluid **Front axle lubricant** AGCO Permatran 821 XL fluid

ENGINE: Make MAN Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** 42254301225417 **Crankshaft** lengthwise **Rated engine speed** 1700 **Bore and stroke** 4.528 x 5.709" *(115.0 mm x 145.0 mm)* **Compression ratio** 20.0 to 1 **Displacement** 551 cu in *(9037 ml)* **Starting system** 24 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and prestrainer **Fuel cooler** radiator for pump return fuel **Exhaust** DOC (diesel oxidation catalyst)/DPF (diesel particulate filter) System and SCR(selective catalyst reduction) with a vertical muffler **Cooling medium temperature control** thermostat

CHASSIS: Type front wheel assist with independent drive to each axle **Serial No.** WAM96123T00F01032 **Tread width** rear 74.8" *(1900 mm)* to 88.6" *(2250 mm)* front 78.7" *(2000 mm)* to 88.6" *(2250 mm)* **Wheelbase** 124.0" *(3150 mm)* **Hydraulic control system** direct engine drive **Transmission** CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment. **Nominal travel speeds mph *(km/h)*** forward: 0 - 37 *(0 - 60)*, reverse: 0 - 21 *(0 - 33)* **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** wet multiple disc hydraulically operated by foot pedal **Steering** hydrostatic **Power take-off** 1000 rpm at 1604 engine rpm **Unladen tractor mass** 28210 lb *(12795 kg)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - 1400 ENGINE RPM

MAXIMUM POWER AT SELECTED TRAVEL SPEEDS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					Speed setting 6					
221.0	29510	2.81	1441	13.1	0.453	15.43	0.054	194	63	28.9
(164.8)	*(131.27)*	*(4.52)*			*(0.275)*	*(3.04)*	*(0.033)*	*(90)*	*(17)*	*(97.8)*
					Speed setting 7.5					
250.9	24830	3.79	1399	3.9	0.401	17.41	0.044	183	61	28.9
(187.1)	*(110.45)*	*(6.10)*			*(0.244)*	*(3.43)*	*(0.027)*	*(84)*	*(16)*	*(97.8)*
					Speed setting 9					
254.8	20515	4.66	1398	2.7	0.393	17.77	0.043	181	63	28.9
(190.0)	*(91.26)*	*(7.50)*			*(0.239)*	*(3.50)*	*(0.026)*	*(83)*	*(17)*	*(97.8)*
					Speed setting 11					
254.9	17155	5.57	1401	1.9	0.393	17.82	0.048	185	61	28.9
(190.1)	*(76.32)*	*(8.97)*			*(0.239)*	*(3.51)*	*(0.029)*	*(85)*	*(16)*	*(97.8)*
					Speed setting 13					
256.0	13965	6.87	1402	1.7	0.392	17.83	0.048	196	63	28.9
(190.9)	*(62.11)*	*(11.06)*			*(0.238)*	*(3.51)*	*(0.029)*	*(91)*	*(17)*	*(97.8)*
					Speed setting 15					
254.0	12470	7.64	1402	1.5	0.394	17.74	0.048	198	61	28.9
(189.4)	*(55.48)*	*(12.29)*			*(0.239)*	*(3.49)*	*(0.029)*	*(92)*	*(16)*	*(97.8)*
					Speed setting 17					
252.9	10915	8.69	1405	1.3	0.395	17.72	0.049	194	59	28.9
(188.6)	*(48.55)*	*(13.98)*			*(0.240)*	*(3.49)*	*(0.030)*	*(90)*	*(15)*	*(97.8)*
					Speed setting 19					
250.1	9930	9.44	1406	1.2	0.400	17.51	0.049	190	59	28.9
(186.5)	*(44.17)*	*(15.20)*			*(0.243)*	*(3.45)*	*(0.030)*	*(88)*	*(15)*	*(97.8)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The performance figures on this report are the result of replacing the electronic engine control module of the Fendt 942 Gen 6 Vario with the Fendt 933 Gen 6 Vario module.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor fell 9.9% short of meeting the manufacturer's 3 point lift capacity claim of 21500 lb *(9750 kg)* at ball ends. This tractor fell 8.3% short of meeting the manufacturer's hydraulic pump flow claim of 113.5 GPM *(430 l/min)* with 2 pumps. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **3197,** Nebraska Summary 1178, December 14, 2020.

Roger M. Hoy
Director

M.F. Kocher
P.J. Jasa
J.D. Luck
Board of Tractor Test Engineers

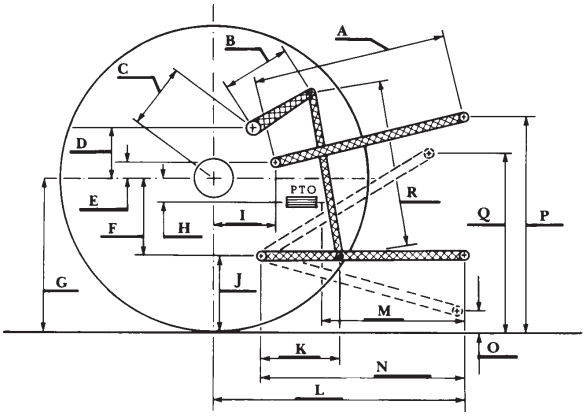
TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
At no load at speed setting 4.7 mph *(7.5 km/h)*	69.5
Transport at speed setting 37 mph *(60 km/h)*	73.5
Bystander	--

Horizontal distances of drawbar hitch point behind rear wheel axis - 38.2 in *(970 mm),* 40.2 in *(1020 mm),* 44.1 in *(1120 mm),* 46.5 in *(1180 mm)*

TIRES AND WEIGHT	**Tested Without Ballast**
Rear Tires - No., size, ply & psi*(kPa)*	Two 900/65R42;***;12*(80)*
Front Tires - No., size, ply & psi*(kPa)*	Two 710/60R34;***;12*(80)*
Height of Drawbar	25.6 in *(630 mm)*
Static Weight with operator - Rear	15995 lb *(7255 kg)*
- Front	12380 lb *(5615 kg)*
- Total	28375 lb*(12870 kg)*

HYDRAULIC PERFORMANCE

CATEGORY: 3	
Quick Attach: No, Walterscheid quick couplers	
Maximum force exerted through whole range:	18635 lbs *(82.9 kN)* (at 24"*(610 mm)* behind hitch points)
	19380 lbs *(86.2 kN)* at ball ends
i) Sustained pressure at compensator cutoff:	2870 psi *(198 bar)*
	three outlet sets combined
ii) Pump delivery rate at minimum pressure:	104.1 GPM *(394.0 l/min)*
iii) Pump delivery rate at maximum	
hydraulic power:	97.3 GPM *(368.2 l/min)*
Delivery pressure:	2325 psi *(160 bar)*
Power:	131.9 HP *(98.3 kW)*
	single outlet set
ii) Pump delivery rate at minimum pressure:	46.2 GPM *(175.0 l/min)*
iii) Pump delivery rate at maximum	
hydraulic power:	44.6 GPM *(168.8 l/min)*
Delivery pressure:	2220 psi *(153 bar)*
Power:	57.8 HP *(43.1 kW)*



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	33.3	*845*
B	15.0	*380*
C	18.6	*476*
D	15.3	*388*
E	7.7	*195*
F	14.3	*362*
G	40.4	*1025*
H	2.4	*60*
I	21.3	*540*
J	26.1	*663*
K	24.8	*630*
L	54.0	*1372*
M	29.7	*755*
N	43.0	*1093*
O	9.1	*230*
P	53.1	*1348*
Q	43.9	*1116*
R	36.6	*930*

RECOMMENDED CITATION FORMAT:

NTTL.(2020). OECD tractor test 3197 for Fendt 933 Gen 6 Diesel.
Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from http://tractortestlab.unl.edu